



## AMERICAN FEDERATION OF TEACHERS

### **I. Math Science Initiative Goal: Improving Teacher Quality**

### **II. AFT Thinking Mathematics Program**

The American Federation of Teachers offers professional development in math for primarily K-6 teachers through its Educational Research and Dissemination program (ER&D). The *Thinking Mathematics* program was developed in 1989 by a team of teachers working with Lauren Resnick and Gaea Leinhardt of the University of Pittsburgh and other researchers to examine the best research available on how children learn mathematics and research specific to the four basic operations. They framed Ten Principles of instruction that emerged from the research findings, and that were recently reinforced by the National Research Council report *Adding It Up: Helping Children Learn Mathematics*, used them in their own practice, and created professional development activities to help teachers understand them. Three ER&D courses help teachers examine the implications of these findings for instruction, understand different ways children may think about math. Examining how children think about mathematics helps teachers articulate and hone their own mathematical thinking.

The courses provide teachers with both practical instructional techniques for helping children learn mathematics and a knowledge base – drawn from the best research available – that supports their use. This helps teachers to see how they can use research findings to help improve student learning.

### **III. Purpose**

To help teachers become users of research related to the teaching and learning of mathematics thereby improving the quality of teaching and student learning.

### **IV. Accomplishments/Results**

At two TM sites, Volusia County, Fla. and Scranton, Pa., studies conducted by local colleges compared results from students/schools whose teachers had Thinking Math training to similar students who did not. Both reports found that students of TM-trained teachers scored significantly better on standardized tests than did their peers. While scoring at least equally well on computation, TM students far outpaced others on conceptual knowledge. Self-reported test scores from individual teachers appear to show similar results.

### **V. Plans for the next 12 months**

- Thinking Math courses will be offered to locals across the country during the annual ER&D Summer Institute in July, as well as at one or more AFT regional institutes.
- As follow-up AFT is facilitating lesson study online with groups of teachers who have had Thinking Math training to help them apply what they learn in the context of specific math standards and lessons and to deepen their understanding of both the content and student learning.